SEATTLE JUSTICE CENTER

FLOOR SPACE: 300,000 ft^2
BUDGET: $92 million ($307/ft^2)
BUILDING POPULATION: 800
CONSTRUCTION DATES: 2001-2002

OWNER: City of Seattle
ARCHITECT: NBBJ Archictects
GENERAL CONTRACTOR: Hoffman Construction Co.
STRUCTURAL ENGINEER: Skilling Ward Magnusson Barkshire
MECHANICAL ENGINEER: CDI Engineers
ELECTRICAL ENGINEER: Abacus
LANDSCAPE ARCHITECT: Gustafson Partners Ltd.
CIVIL ENGINEER: SvR Design Company

PROJECT NOTES

SITE AND WATER

- **Replacement:** New building replaced the Public Safety Building, an old, seismically deficient building. During the redevelopment, petroleum contaminated materials and soil were removed from the site.
- **Stormwater:** A vegetated green roof absorbs rainwater and diverts it from the city drainage system, slowing peak flows and improving water quality.

ENERGY AND ATMOSPHERE

- **Glazing:** Building's second skin provides maximum indoor day-lighting and views to Elliott Bay while protecting interior from excessive solar heat.
- **Roof:** Green roof provides increased insulation and thermal mass.

MATERIALS AND RESOURCES

- **Recycling:** On-site materials recycling program diverts building waste from the landfill.
- **Building materials:** Recycled-content materials used wherever possible, including recycled structural steel, recycled concrete and recycled-content carpet. FSC-certified wood, forest products that have been independently assessed as adhering to the Forest Stewardship Council's principles for well-managed forests, was also used in construction and finishing.

INDOOR ENVIRONMENTAL QUALITY

- **Air quality:** Construction dust in ducts minimized by using and changing filters of the VAV boxes. A two-week indoor air flush period before occupancy will further ensure air quality.
- **Toxicity:** No VOC materials used for interior finishing.

When the architects and project team sat down in 1999 to discuss their goals for the new Justice Center at a design charrette led by Tom Paladino, they had a significant task before them. The $90 million project would need to conform to the city's new sustainable building policy, requiring a LEEDTM silver rating at minimum. At the same time, the new Justice Center needed to display the dignity and public openness of a courthouse and the authority of a police headquarters, all within a limited city budget. Still, the project team was determined to make the project an example of good, sustainable building practices to the public and the building community in particular.

Following this meeting, the project team prioritized the three main sustainable building goals of the new building in order to begin realistically allocating their budget toward different building aspects. The goals were ordered as follows:

1. Pursue any design features that help to achieve a minimum LEEDTM silver rating.
2. Emphasize those features that will be legible to people using the building.
3. Pursue other ideas which have value as demonstration projects, but which don't help toward furthering a high LEED™ rating.

Learning from the past

An added impetus to aim for sustainability came from the team's desire to correct mistakes made with the last building to occupy the space to be developed. The old Public Safety Building was being torn down 50 years after it was built. It was seismically deficient and generally at the end of its useful life.

In addition, it was often noted by occupants and guests of the old building that there was not a clear distinction between the dual functions of police headquarters and city courthouse. The new building would need to build the distinction between these agencies into the design, and make that design sustainable—one that would last well beyond the 50-year lifespan of the Public Safety Building.

Ultimately, the project team was able to accomplish these complex tasks. The team came up with a viable design for one building that expresses two very different identities. The courts portion to the south is very open and includes a lot of glass, and leaves plenty of room for civic art, representing the more public nature of the court's function. At the north end of the building, the police section conveys a more traditional office building face, discreet and accessible through an entry canopy.

Planting a roof

One of the most innovative design elements of the Justice Center, and one that will contribute to the building's sustainability in a wide variety of ways, is the use of a "green roof" or "living roof." This design adds a layer of soil over the top of a membrane roof in which grasses and other plants are grown. The green roof adds insulation value to the roof, both by adding an insulating layer of soil and by removing solar energy through photosynthesis.

It absorbs and stores rain water that might otherwise find its way into storm sewers, and it provides a large green space that helps to filter pollutants out of the air while returning some oxygen to the atmosphere. The largest portion of planted roof has been placed adjacent to the public outdoor terrace at the twelfth floor of the building, where it will also serve to create a pleasant viewing landscape where visitors and staff can relax.

The design calls for a water harvesting system that will collect rainwater that falls on the site and store it for later reuse. Using harvested rainwater will reduce the building's use of municipal potable water. The harvested water can be used to irrigate plants as needed, and to charge the water feature that has been included as part of the landscape design. The design team is also currently evaluating the possibility of using this water to charge toilets and urinals throughout the building.

Glazing for sustainability

The most noticeable feature of the new building is the west façade, which has been designed with a naturally vented "double skin." The intent of this section of window wall is to allow maximum penetration of light to the interior working spaces while minimizing heat gain. The high-tech efficiency of the second skin has the added benefit of contributing to the grand architectural feel of the courthouse.

The façade is composed of two separate planes of glass separated by a 30-inch air space. This air space has louvers on automatic control at the top and bottom of the wall which can be either closed to retain air, creating an insulating barrier to retain heat on cold days, or opened to vent heat from the assembly on hot days. In the open position, the façade draws air into the cavity at the bottom of the wall, which naturally rises through the space as it is heated, before being vented out at the top of the wall.

In the Justice Center, the design has taken care to locate the large public lobbies and the major areas of open office space facing this curtain wall. This will allow maximum exposure to natural light for as many of the building's occupants as possible. To throw natural light deep into the open office areas, a light shelf has been incorporated into the design of the double-skin facade at each floor. The shelf projects horizontally into the space, and is located eight feet above the floor. It will serve both to shade unwanted glare and to reflect sunlight onto the ceiling, which will provide good diffuse light throughout the space.

While very rare in the United States, systems like this have been in use in Europe for some time, and have proven to be highly effective in reducing energy consumption while maintaining a high level of transparency. All in all, the building's sustainability measures will do as much for the immediate comfort of its occupants as it will for the long-term health of the building industry in Seattle and the Pacific Northwest.

"Our intention is to design a quiet, elegant but dignified building."
—NBBJ Principal and Project Designer Rick Zieve

SEATTLE JUSTICE CENTER

CASCADIA REGION GREEN BUILDING COUNCIL

CASE STUDY SPONSORED BY:

Seattle Public Utilities

WASHINGTON STATE DEPARTMENT OF ECOLOGY

King County

O'Brien & Company

Interface Engineering

Glumac International

BC Buildings Corporation

U.S. GREEN BUILDING COUNCIL CHAPTER